

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Initially, applicant and applicants' representative wish to thank Examiner Cunningham for the interview granted applicants' representative on December 13, 2005. During the interview, the outstanding rejections were discussed in detail. Further, during the interview applicants' representative presented comments to Examiner Cunningham as to how the claims were believed to distinguish over the applied art. Specifically, it was emphasized that the claimed feature of one of the reference points in each frame being a reference point represented by coordinate values and remaining representative points in a same frame being represented by vectors with reference to the reference point or other of the representative points distinguished over the applied art. Claim amendments to clarify such features were also discussed, and the present response submits those discussed claim amendments. The Examiner indicated he would further consider claim amendments and comments when presented in a filed response.

Claims 1-39 are pending in this application. Claims 1-10, 28, 29, 34, and 35 were rejected under 35 U.S.C. §102(a) as anticipated by U.S. patent 6,462,754 to Chakraborty et al. (herein "Chakraborty"). Claims 11-27, 30-32, and 36-38 were rejected under 35 U.S.C. §103(a) as unpatentable over Chakraborty as applied to claims 1-10, 28, 29, 34, and 35, and further in view of U.S. patent 6,504,569 to Jasinski et al. (herein "Jasinski"). Claims 24-27, 33, and 39 were rejected under 35 U.S.C. §103(a) as unpatentable over Chakraborty as applied to claims 1-5, and further in view of the publication "Panoramic Image Mosaics" to Shum et al. (herein "Shum").

Addressing the above-noted rejections, those rejections are traversed by the present response.

As noted above the claims are amended by the present response to clarify features recited therein. Independent claim 1 now more specifically recites:

extracting the representative points of the figure for each of the frames, one of the representative points within one of the frames being a reference point represented by a coordinate value and remaining representative points within said one of the frames being represented by vectors with reference to the reference point or other of said remaining representative points[.]

The other claims are similarly amended.

That is, each of the independent claims recites within *one frame* describing a reference representative point of an object by a coordinate value and by *describing remaining representative points by a vector from other representative points*. With such a structure the vector can be described by a smaller amount of data.

Such a claimed structure is shown as a non-limiting example in Figure 5 in the present specification. As shown for example in Figure 5, in one frame the point V0 is a reference point that is represented by a coordinate value, and remaining representative points V1, V2, V3, V4 in that same frame are represented by vectors with reference to the reference point V0 or to other of the representative points. For example representative point V1 is represented by a vector 1 with reference to reference point V0, representative point V2 is represented by vector 2 with reference to representative point V1, etc. Such features are believed to distinguish over the applied art to Chakraborty.

The basis for the outstanding rejection indicates that in Chakraborty in each of the frames one of the representative points of the reference points is represented by a coordinate value and the remaining representative points are represented by a relative position data with reference to the reference points, particularly citing Chakraborty at column 4, lines 9-15 and

43-46, column 6, lines 36-46, column 7, lines 25-29, column 8, line 26 – column 9, line 67, and (EQ. 1).¹

However, with respect to that basis for the outstanding rejection applicants note Chakraborty merely teaches that motion analysis may include an affine transformation. Corresponding vertices and object types are interpolated between frames of shots of the video to define a spline function such that the spline defines the motion of the objects of interest between the frames. A video editor includes means for interpolating vertices of the objects between frames to define motions of the objects of interest so that the objects of interest are tracked during video play, see for example Chakraborty at column 4, lines 8-15 and 43-46.

Chakraborty differs from the claims as currently written as Chakraborty does not disclose or suggest representing a reference point by a coordinate value and remaining representative points by vectors with reference to other representative points within *one frame*, as clarified in the claims.

More particularly, the claims set forth that within a single frame structure, such as in Figure 5, a certain point is represented by coordinate values and other points are represented by vectors with respect to other points.

The basis for the outstanding rejection at several points references the equation EQ.1 in Chakraborty as meeting the claim limitations. However, applicants note that equation does not appear to be directed to such a feature as discussed above. That equation in Chakraborty is directed to “a motion for two consecutive frames”.² However, the claims are not directed to representative points in different frames but in the same frame, such as shown for example in Figure 5 in the present specification. Thus, Chakraborty is not believed to meet the claim features.

¹ Office Action of September 16, 2005, paragraph 4A, top of page 3.

² Chakraborty at column 8, line 26.

Further, the claims recite trajectories of the representative points (coordinate value and vector) are defined by functions and the object region data is described by using the information specifying function.³ Independent claims 6 and 29 additionally recite that the object region is described by expressing the movement of a representative point by vectors in consecutive frames and by converting the trajectory of the vectors into an approximate function.⁴

The outstanding rejection cites Chakraborty at column 4, lines 50-65, column 8, line 26 to column 9, line 67 with respect to disclosing approximating first and second trajectories with first and second functions, the first and second trajectories being obtained by arranging, in the frame advancing direction, the coordinate value of the reference point and the vectors of the remaining representative points.

However, with respect to that basis for the outstanding rejection applicants note Chakraborty merely teaches that a motion at each point in an image for two consecutive frames is described by $I_i(x-V_x(x,y), y-V_y(x,y)) = I_{i+1}(x,y)$. Applicants also note that although the Office Action indicates that V_x corresponds to a “first trajectory with a first function”, and V_y corresponds to a “second trajectory with a second function”, V_x and V_y relate to summations of partial derivatives of the image intensity at (x, y) that are taken over a small neighborhood. Thus, V_x and V_y do not correspond to a “trajectory with a function”. Stated another way, Chakraborty obtains a trajectory of an object as a whole, but does not obtain trajectories over respective representative points of the object.

Moreover, Chakraborty does not define trajectories of the representative points (coordinate value and vector) by functions, nor does Chakraborty disclose describing the object region data by using the information specifying the function.

³ See the original specification for example in Figures 10, 11A, and 11B.

⁴ See for example the present specification at page 40, line 4 to page 41, line 12 and Figure 12 in the present specification.

The features as discussed above are reflected in the claims as currently written and are believed to also clearly distinguish over Chakraborty.

Moreover, no teachings in Jasinski or Shum are believed to overcome the above-noted deficiencies in Chakraborty.

In such ways, applicants respectfully submit claims 1-39 as currently written clearly distinguish over the applied art.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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